THE CITY OF SAN DIEGO

DATE: September 16, 2010

TO: Independent Rates Oversight Committee (IROC) Members

FROM: Eduardo Luna, City Auditor

SUBJECT: **Options for a Performance Audit of the Public Utilities Department**

On April 12, 2010, we met with IROC to discuss the fiscal year 2011 audit to be funded by the Public Utilities Department. We agreed to perform a survey and risk assessment to develop potential audit options for IROC's consideration. We identified five key issues—Purchased Water, Water Distribution System, Capital Improvement Program, Water and Wastewater Treatment, and Overhead Rates and Interdepartmental Charges—and are providing nine audit options related to these areas. Once an option is chosen, OCA estimates using about 900-1,000 audit hours during this fiscal year to conduct the performance audit.

The Metropolitan Wastewater Department and the Water Department were merged into the Public Utilities Department (Department) in July 2009. The Department has four branches—Water Operations, Wastewater Operations, Business Support, and Strategic Programs—that are funded by the Water Enterprise Fund and Sewer Enterprise Fund, which are separate from the City's General Fund. The different branches are responsible for all Public Utilities functions, but separate accounting is maintained for each fund. The Department receives most of its revenues from customer charges for water and wastewater, which are set based on projected expenditures. The Department also receives revenue for treating wastewater for other municipalities in San Diego County and the proceeds from the sale of bonds for capital improvement projects.

We conducted a risk assessment and preliminary survey to identify key issues and potential audits for the Public Utilities Department. During this survey, we interviewed key Department officials, including the executive team and deputy directors, and representatives from related organizations such as IROC and taxpayer associations. We also reviewed relevant legislation,

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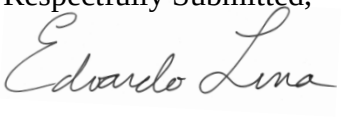
best practices for the water and wastewater industries. In addition, we reviewed budget data and assessed changes in expenses and full-time equivalent positions for the water and wastewater departments for fiscal years 2006 through 2011. We relied on budget figures provided by the Department, and did not independently audit their reported data. We will conduct data reliability procedures during our performance audit. In order to ensure that we identified key crosscutting issues, we used a qualitative rather than strictly quantitative approach in our risk assessment, and used professional judgment to identify key issues for the Department.

Respectfully Submitted,



Eduardo Luna
City Auditor

Discussion

The Public Utilities Department's fiscal year 2011 budget of $1.01 billion has decreased approximately 2 percent from the previous year. (See Exhibit 1.) The Wastewater and Water budgets have increased from fiscal year 2006 to 2011 by 65 percent and 14 percent, respectively. (See Exhibits 2 and 3.)

Exhibit 1: Changes in Public Utilities Expenses from Fiscal Year 2010 to 2011

Millions of Dollars

	2010	2011	Change
Water	536.3	530.8	-5.5
Wastewater	493.4	481.1	-12.3
Total	1,029.7	1,011.9	-17.8

Source: OCA analysis of Public Utilities budget.

Exhibit 2: Percent Change in Wastewater Budget Components, Fiscal Years 2006 to 2011
Millions of Dollars

Component	2006	2011	Percent Change
All Other[a]	197.9	192.8	-3
CIP	36.6	135.2	269
Debt and State Revolving Funds Payments	124.1	113.1	-9
Reserves	41.6	6.1	-85
Pension & Other Post-Employment Benefits	14.8	15.6	5
Chemicals	8.4	18.5	121
Total	**423.5**	**481.1**	**14**

Source: OCA analysis of wastewater budget. Note: Totals may not add due to rounding.
[a] This category includes employee salaries and other operating costs.

Exhibit 3: Percent Change in Water Budget Components, Fiscal Years 2006 to 2011

Millions of Dollars

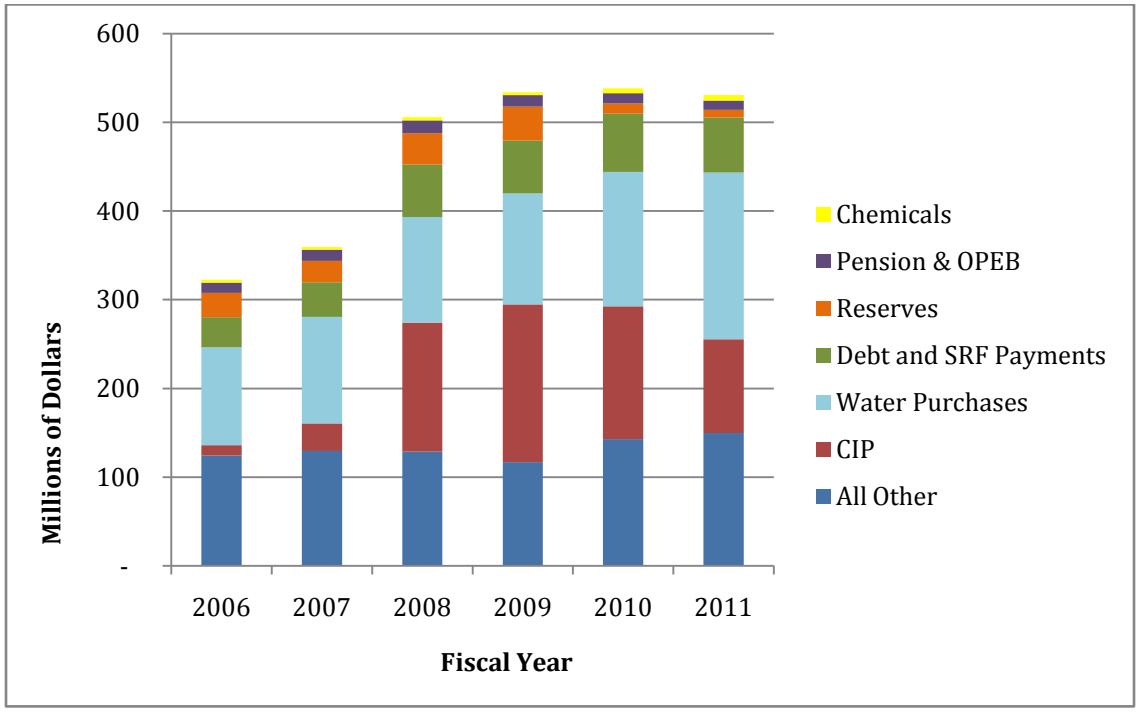
Component	2006	2011	Percent Change
All Other[a]	124.6	149.9	20
CIP	11.4	105.7	824
Water Purchases	110.4	187.9	70
Debt and State Revolving Funds Payments	33.8	62.0	83
Reserves	27.5	8.8	-68
Pension & Other Post-Employment Benefits	11.8	10.5	-11
Chemicals	3.1	6.1	100
Total	**322.5**	**530.8**	**65**

Source: OCA analysis of water budget. Note: Totals may not add due to rounding.
[a] This category includes employee salaries and other operating costs.

Increases in the water and wastewater budgets are largely attributable to significant increases in the Capital Improvement Program (CIP) as the Department complies with federal and state regulations. (See exhibits 4 and 5.) For example, a California Department of Public Health Compliance Order requires that the City replace 10 miles of cast iron water pipe annually, among other requirements.[1] Budget increases are also attributable to increases in the cost of (1) chemicals to treat water and wastewater and (2) purchased water. Between fiscal years 2010 and 2011, the costs of the City's water purchases have increased by about $36 million or 24 percent. Most of the increase was due to the County Water Authority raising water rates in calendar year 2011. According to Public Utilities officials, over 90 percent of purchases are for raw water, but the Department spends about $5-6 million annually to purchase treated water to meet customer demand.

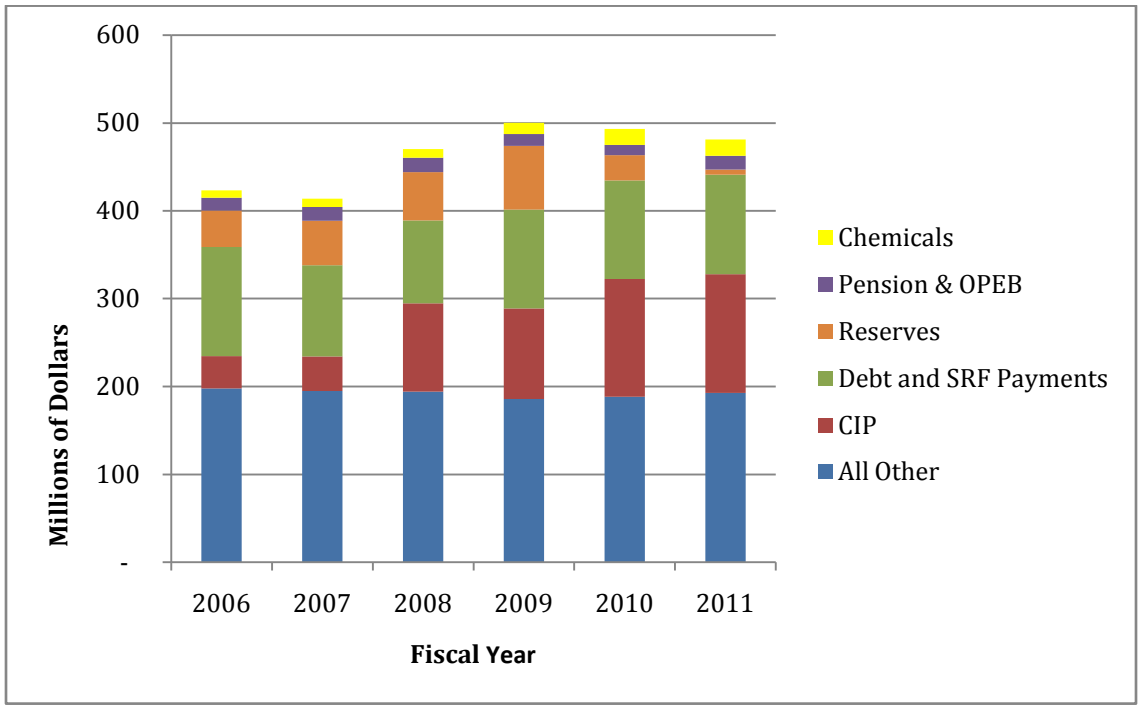
[1] Many older sections of San Diego have water mains that were constructed 50 to 70 years ago of unlined cast iron pipe and are vulnerable to corrosion and rupture. State of California, Department of Health Services, Compliance Order No. 04-14-96CO-022.

Exhibit 4: Water Budget Components, Fiscal Year 2006-2011



Source: OCA analysis of water budget.
All Other includes employee salaries and other operating costs.

Exhibit 5: Wastewater Budget Components, Fiscal Years 2006-2011



Source: OCA analysis of water budget.
All Other includes employee salaries and other operating costs.

For fiscal year 2011, the Department has budgeted about 1,626 full-time equivalent positions. Since fiscal year 2006, FTEs decreased for both water and wastewater by 21 percent and 13 percent, respectively. (See Exhibit 6.)

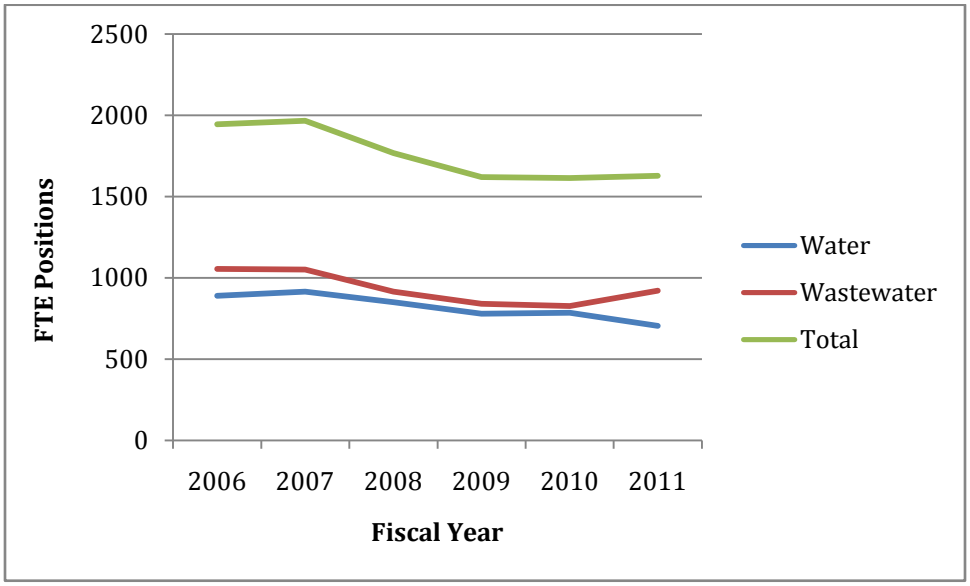
Exhibit 6: Changes in Budgeted Full-Time Equivalent Positions, Fiscal Years 2006-2011

	2006	2007	2008	2009	2010	2011	Percent Change
Water	889	914	850	778	785	704	-21%
Wastewater	1,055	1,051	916	840	827	922	-13%
Total	1,944	1,965	1,767	1,619	1,613	1,626	-16%

Source: OCA analysis of water and wastewater budget data.

Note: Totals may not add due to rounding.

Exhibit 7: Changes in Full-Time Equivalent Positions, Fiscal Years 2006-2011



Source: OCA analysis of water and wastewater budget data.

Conclusion

Based on our survey and risk assessment, we identified five key issues for the Department where potential risks exist or efficiencies can be gained and nine related potential audits. (See Exhibit 8 and Appendix A.)

Exhibit 8: Summary of Survey Results

Key Issues	Potential Audits
Purchased Water	1. Conservation 2. Reclaimed Water 3. Indirect Potable Reuse (IPR)
Water Distribution System	4. Valve Maintenance
Capital Improvement Program	5. Long-term Planning and Project Prioritization 6. Compliance with Regulations and Requirements 7. Efficiency and Oversight of Capital Projects
Water and Wastewater Treatment	8. Chemical Purchases and Usage
Overhead Rates and Interdepartmental Charges	9. Overhead Rates and Interdepartmental Charges

Source: OCA.

These options are not listed in any particular order or ranked, but it is important to consider these options in the context of timing, resources, and other factors in order to provide useful and timely information to decision-makers. Further, some of the options may require more audit hours than our current budget of 900-1,000, so we will adjust the audit scope to ensure a value-added audit within the budgeted hours.

Appendix A: Key Issues and Potential Audit Options for the Public Utilities Department

Key Issues and Background	Potential Audits	Researchable Questions	Associated Costs and Staff	Timing, Resources, and Other Factors
Purchased Water Water is likely to be the most critical resource challenge facing San Diego, and dependence on imports is neither optimal nor sustainable. Diversification into other sources will be necessary. About 80 percent of San Diego County's water is imported—two-thirds are from the San Joaquin River Delta and the remainder from the Colorado River. Population growth in the area continues to increase overall water use. The marginal cost of water is expected to more than double by fiscal year 2030. The City of San Diego budgeted $187 million	**1. Conservation** Conservation is achieved by using less water or using water more efficiently. San Diego has ongoing conservation programs and initiatives to address water shortage conditions resulting from the drought. Based on an economic analysis of marginal costs, energy intensity and other factors, conservation is the most viable of the seven water source options analyzed.[2]	1. To what extent does the current or planned rate structure promote water conservation, and what other rate structures have been assessed? 2. To what extent are the (1) public involvement and educational campaign and (2) ongoing programs and initiatives effective in reducing the demand for water? 3. To what extent is the Department planning new initiatives?	• The City budgeted $187 million for purchased water in fiscal year 2011—24 percent more than in the previous year. • Water and wastewater budgeted about $5.2 million and 15 FTEs for water conservation in fiscal year 2011.	• Good timing for an assessment of the program: o The City reported that overall consumption for the fiscal year was down by 12 percent. o The Department is working on cost of service study to determine future rates. • Changes in rates structure is a policy decision. • Will need to focus on one or two researchable questions or conduct high level audit in order to complete in 900-1000 audit hours.
	2. Reclaimed Water Reclaimed water is also known as recycled non-potable water. Wastewater can be recycled, partially treated, and used for agricultural irrigation, landscaping, industrial, and other related uses. San Diego has a limited reclaimed water	1. To what extent has the Department assessed the costs and benefits of the program, especially considering that reclaimed water is being sold below cost? 2. Has the Department assessed solutions for the seasonality and low demand	• The City budgeted $187 million for purchased water in fiscal year 2011—24 percent more than in the previous year.	• Good timing for an assessment of the program as the Department and City consider the viability of the program and whether to expand the distribution system. • Will need to focus on one or two researchable

[2] The seven options analyzed were imported water, desalinated, groundwater, recycled non-potable (reclaimed water), recycled potable (IPR), surface water, and conservation. Fermanian Business &Economic Institute, *San Diego's Water Sources: Assessing the Options* (San Diego, CA: July 2010).

Key Issues and Background	Potential Audits	Researchable Questions	Associated Costs and Staff	Timing, Resources, and Other Factors
for purchased water in fiscal year 2011—24 percent more than in the previous year.	distribution system through its purple pipes. Currently, the supply of reclaimed water exceeds demand even though the Department has priced it below cost at about 30 percent of potable water to make it more attractive. To increase demand for reclaimed water, the City will likely need to expand its distribution system to reach more customers, but the capital costs to retrofit the system would be substantial.	for reclaimed water? 3. To what extent has the City assessed expansion of the distribution system and, if so, what is the justification and cost of expansion?		questions or conduct high level audit in order to complete in 900-1000 audit hours.
	3. Indirect Potable Reuse (IPR) With advanced treatment, recycled water can be added to existing water supplies, such as open reservoirs. The expense of conveying recycled potable water for reservoir augmentation is less than would be needed to retrofit the reclaimed water distribution system.[3] The biggest obstacle to IPR is one of social acceptance, particularly after the negative publicity the program received in the past. The Department recently began a water	1. To what extent did the Department effectively conduct the demonstration project and reach its conclusions? 2. To what extent is the Department conducting public outreach and education to promote social acceptance of IPR? 3. How has the Department chosen plants for IPR facilities, and to what extent are these the most effective and efficient locations?	• The City budgeted $187 million spent for purchased water in fiscal year 2011—24 percent more than in the previous year. • The demonstration project will cost about $11,811,000. • Requirement capital costs for IPR were estimated at $1,630/AF in fiscal year.	• Timing will be optimal in about 12-18 months when the Department completes the demonstration project and makes decision on whether to move forward with this program. • The City Council will benefit from our review of the program prior to making its decision in about 2 years (summer of 2013). • An in-depth performance audit of this

[3] *San Diego's Water Sources: Assessing the Options*, 11.

Key Issues and Background	Potential Audits	Researchable Questions	Associated Costs and Staff	Timing, Resources, and Other Factors
	purification demonstration project to explore the use of advanced purification technology to provide safe and reliable water. A completed report on the study results will be presented to the City Council in the summer of 2013. In concert with this project, the Department is conducting public education and outreach. Notably, public opinion polls show that opposition to IPR decreased from 45 percent in 2004 to 12 percent in 2009.			program will require at least 1500-1800 audit hours.
Water Distribution System Unlike the wastewater delivery system, the water distribution system does not have mandated capital improvements. Failures in the system, such as water main breaks, have an impact on health, safety, and the environment and wastes scarce water resource. Aging valves which are not fully operational add to the time it takes for the Department to stop the flow of water	**4. Valve Maintenance** The Water Construction and Maintenance Branch conducts maintenance on valves every five years, which includes partially turning the valve to deem it operational. Valves are replaced either when the water pipe is replaced as part of a capital project or when a main break occurs. Current staffing levels do not allow for more frequent maintenance. The Environmental Protection Agency and American Water Works Association recommend that valves should be	1. To what extent do the Department's valve maintenance practices and schedule effectively ensure that valves are operational? 2. To what extent do the Department's valve maintenance practices impact its ability to effectively respond to system failures, such as water main breaks? 3. To what extent does the City account for losses incurred during water main breaks?	• The Department budgeted about $29.7 million and 215.86 FTEs for water construction and maintenance for fiscal year 2011. • An official told us it is difficult to extract a specific amount for valve maintenance because crews have multiple functions.	• Good timing for an assessment of valve maintenance as the Department responded to 126 water main breaks in fiscal year 2010 and has a CIP underway to replace pipes. • We will need to focus on one or two researchable questions or conduct high level audit in order to complete in 900-1000 audit hours.

Key Issues and Background	Potential Audits	Researchable Questions	Associated Costs and Staff	Timing, Resources, and Other Factors
during a main break.	opened and closed all the way annually in order to be considered operational. The City's water distribution has vulnerabilities if it does not know which valves are truly operational and cannot shut off valves when needed.			
Capital Improvement Program The City has aging infrastructure for both its water and wastewater systems and until recently, significant investment has not been made in capital improvements of these systems. Currently, the Department's CIP is driven by requirements for compliance with a Consent Decree and California Department of Health Services Order.	**5. Long-Term Planning and Project Prioritization**	1. To what extent has the Department effectively identified its inventory of assets and assessed the condition of these assets? 2. To what extent has the Department developed a multi-year plan for its CIP, including identifying required funding? 3. To what extent effectively prioritizing projects? 4. To what extent is the Department strategically managing its assets to obtain the highest return on its investment for capital projects?	• Increases in the Department's fiscal year 2011 budget are largely attributable to increases in the CIP. The Department has budgeted a total of $240.9 million for water and wastewater CIP projects. • Since fiscal year 2006, investment in the CIP has increased by o 269 percent for water, and o 824 percent for wastewater.	• We will not get into this depth and specificity on our Citywide CIP audit. • Good timing for an assessment of the program as the Department completes a long-term master plan for its CIP. • We will need to focus on one or two researchable questions or conduct high level audit in order to complete in 900-1000 audit hours.
	6. Compliance with Regulations and Requirements	1. Is the Department in compliance with regulatory		• We will not get into this depth and specificity on

Key Issues and Background	Potential Audits	Researchable Questions	Associated Costs and Staff	Timing, Resources, and Other Factors
	The Department's CIP is driven by regulatory mandates and requirements, such as the Consent Decree with the Environmental Protection Agency to replace and rehabilitate sewer pipes. The CIP is substantial and will be focused on compliance with these requirements at least for the next five years. If the City is not in compliance, it may face legal actions and fines could be assessed.	requirements? 2. To what extent has the Department developed a plan for complying with requirements? 3. To what extent is the Department effectively and efficiently meeting requirements?		our Citywide CIP audit. • Good timing for an assessment of the program as the Department completes a long-term master plan for its CIP. • Depending on the focus, this could be a compliance audit and could be completed in 900-1000 audit hours.
	7. Efficiency and Oversight of Capital Projects The financial consequences of significant delays in implementing projects, including potential increases in construction costs and related debt service costs for these projects could be substantial. The Department must effectively and efficiently manage its limited CIP resources and closely monitor capital projects. The Engineering & Capital Projects Department manages capital projects for Public Utilities.	1. To what extent is the Department providing oversight of operations for capital projects? 2. To what extent are capital projects effectively and efficiently managed? 3. To what extent does the Engineering & Capital Projects Department have internal controls to manage cost and schedule overruns? 4. To what extent does Public Utilities work with E&CP to ensure that controls are in place and projects are effectively and efficiently managed?		• We will not get into this depth and specificity on our Citywide CIP audit. • Good timing for an assessment of the program as the Department completes a long-term master plan for its CIP. • We will need to focus on one or two researchable questions or conduct high level audit in order to complete in 900-1000 audit hours.

Key Issues and Background	Potential Audits	Researchable Questions	Associated Costs and Staff	Timing, Resources, and Other Factors
Water and Wastewater Treatment 90 percent of Department purchases are for raw water which is then chemically treated in one of its three water treatment plants. Wastewater treatment also requires a significant amount of chemicals to treat sewage and recycle water.	**8. Chemical Purchases and Usages** The wastewater department recently reviewed chemical usage and identified about $1.8 million in efficiencies. Given rising costs for chemicals, the Department needs to ensure that chemical purchases and usage are effective and efficient.	1. To what extent is the Department reviewing chemical using and ensuring that it is efficient and effective?	• The Department's fiscal year 2011 budget for chemicals is $24.6, including: o $6.1 million for water, and o $18.5 million for wastewater. • The cost of chemicals used for water and wastewater treatment has increased an average of 18% annually over the last five years.	• The focus of this audit would likely review the efficiencies identified by wastewater and determine if efficiencies can be gained on the water side. • Given the scope, this audit could be completed in 900-1000 audit hours.
Overhead Rates and Interdepartmental Charges	**9. Overhead Rates and Interdepartmental Charges**	1. To what extent are the Department's overhead rates and interdepartmental charges reasonable, equitable, and justifiable? 2. To what extent are rates determined by Public Utilities Department management? 3. To what extent are other City departments using the same overhead rates and interdepartmental charges?	• The budgeted overhead recovery by the general fund for fiscal year 2011 is approximately $14.8 million. This figure excludes direct labor billed through service level agreements.	• Given the scope, this audit could be completed in 900-1000 audit hours.